AMENDMENTS TO THE SPECIFICATION

In the Specification as Originally filed

Page 6, lines 12 to 16, (paragraph 0002) should be re-written as follows:

FIGURE 3 is a schematic diagram of a local converter (or "set-top box") designed in accordance with the invention to receive ~~process~~ intermediate-frequency DTV signal supplied via the coaxial-cable downlead driven from the FIGURE 1 remote tuner and to up-convert that intermediate-frequency DTV signal to a radio-frequency DTV signal for reception by a conventional digital television receiver.

Page 9, lines 1 to 27, (paragraph 0024) should be re-written as follows:

Instead, the amplified IF signal from the IF voltage amplifier **15** is applied as input signal to an IF cable-driver amplifier **18**. The cable-driver amplifier **18** is a power amplifier for the amplified IF signal, supplying it through a bandpass coupler **19** to a downlead coaxial cable **20**. The source impedance of the cable-driver amplifier **18** is not larger than being comparable with the characteristic impedance of the coaxial cable **20**. The source impedance of the cable-driver amplifier **18** can be designed to be the characteristic impedance of the coaxial cable **20**, to reduce the possibility of secondary reflections of the amplified IF signal in the cable **20**. However, the cable-driver amplifier **18** can alternatively be designed to have a source impedance lower than the characteristic impedance of the coaxial cable **20**. The characteristic impedance of the coaxial cable **20** can be 51 to 125 ohms pure resistance, for example, supposing its inner conductor is straight-wire in nature. RG-59/U, which has a characteristic impedance of 75 ohms pure resistance, is commonly used as a downlead from a balun at the antenna, to facilitate the balun ~~proving~~ providing an impedance-matched connection from a 300-ohm antenna. Since the remote tuner **10** uses the cable-driver amplifier **18** to drive the coaxial cable **20**, there is no need for the downlead to have a characteristic impedance of 75 ohms. The operating current requirements for circuitry driving signal through the cable **20** can be reduced almost twenty-fold by using a coaxial cable with an inner conductor wound as a single-layer coil. RG-65/U has a characteristic impedance of 950 ohms pure resistance. Other coaxial cable designs wind the inner conductor as a single-layer coil on a flexible magnetic core material to achieve characteristic impedances of 1600 to 2800 ohms pure resistance. Insofar as cable prices permit, it is generally preferable that the coaxial cable **20** have a characteristic impedance of 950 ohms or more. A downlead with twin conductors spaced apart can be used to get higher characteristic impedance, but lack of grounded shielding makes radiation of IF signals from such downlead more of a problem than is the case with grounded-shield coaxial cable. So, coaxial-cable downlead is preferred as a downlead transmission line.

Page 19, lines 11 to 28, (paragraph 0047) should be re-written as follows:

The front-end circuitry **73** differs from the front-end circuitry **72** in that its frequency conversion circuitry causes an amplified second IF signal supplied from the front-end circuitry **73** to have a second center frequency differing from the first center frequency of the amplified first IF signal supplied from the front-end circuitry **72**. The amplified IF signal from the front-end circuitry **73** is applied as input signal to an IF cable-driver amplifier **74**, which amplifies the power of this IF signal as subsequently supplied through a bandpass coupler **75** to the downlead coaxial cable **20**. The source impedance of the cable-driver amplifier **74** is not larger ~~being~~ than being comparable with the characteristic impedance of the coaxial cable **20**. The source impedance of the cable-driver amplifier **74** can be designed to be the characteristic impedance of the coaxial cable **20**, to reduce the possibility of secondary reflections of the amplified IF signal in the cable **20**. However, the cable-driver amplifier **74** can alternatively be designed to have source impedance lower than the characteristic impedance of the coaxial cable **20**. The bandpass coupler **75** is a wideband filter that is transparent to the second IF signal supplied from the cable-driver amplifier **74**, but presents high impedance at the low frequencies at which power is cabled up to the remote tuner **10** via the cable **20**. The bandpass coupler **75** also presents high impedance to the coaxial cable **20** at intermediate frequencies in the first IF signal supplied from the cable-driver amplifier **18**.

Page 29, lines 6 to 17, (paragraph 0071) should be re-written as follows:

The portion of the local DTV receiver **140** shown in FIGURE 7C is identical to the portion of the local DTV receiver **90** shown in FIGURE 5C. The description of FIGURE 5C describes the audio decoders **90** and **110** each recovering just left-channel, right-channel and low-frequency-enhancement signals. However, the AC-3 coding system incorporated in A/53 provides for transmission of as many as five independent ~~full bandwidth~~ full-bandwidth audio channels in addition to the lower-bandwidth channel for low-frequency-enhancement signals. The audio decoders **90** and **110**, the audio swap multiplexer **93**, the digital-to-analog conversion circuitry **116**, and the audio amplifier circuitry **117** will in some DTV receiver designs be capable of driving not only loudspeakers ~~**118 – 119**~~ **118, 119 and 120**, but additional loudspeakers as well. The description is limited to describing only three loudspeakers ~~**118 – 119**~~ **118, 119 and 120** primarily because of space limitations in FIGURES 5C and 7C of the drawing.

Page 32, lines 17 to 28, (paragraph 0081) should be re-written as follows:

Another, plural-conversion approach that can be taken is to frequency multiplex first and second IF signals that result from up-conversion to the UHF band in the remote tuner, apply these UHF signals to the coaxial cable **20**, and then in the local DTV receiver down-convert these UHF signals individually to VHF IF signals with similar carrier frequencies, or to VHF IF signals with non-overlapping frequency spectra. This approach is advantageous if several DTV channels are to be simultaneously received, in that harmonics of the UHF IF signals can ~~all~~ fall far above the signals themselves in frequency. Terminating the coaxial cable **20** with its characteristic impedance for a number of contiguous 6-MHz-bandwidth IF signal channels can be easier to do, since their combined bandwidth is a smaller fraction of their absolute frequencies. Preventing radiation of the IF signals to the atmosphere can be a greater problem with UHF IF signals, however, than with IF signals of lower frequency.

In the Specification as Published

Typographical errors are discerned in the following paragraphs of the published application.

[0003] DTV signal reception is generally considerably better when an in-doors DTV receiver uses an outdoor antenna, rather than an indoor antenna. Losses in field strength owing to attenuation in building materials are avoided by using the outdoor antenna, so carrier strength is boosted vis-à-vis the internal noise of the receiver to improve C/N. Also, changes in field strength and multipath conditions may occur with indoor antenna reception owing to people and pets moving around in the antenna field. Highly directive outdoor antennas, such as yagis, can reduce the strength of multipath vis-à-vis the principal component of received signal, reducing the need for extensive channel-equalization and its attendant penalty in carrier-to-noise ratio (C/N).

[0006] Over-the-air terrestrial television broadcasting is done in the United States of America using 6 MHz wide channels located in three discrete frequency bands, TV broadcast channels 2 through 6 are in a lower VHF band extending from 54 to 88 MHz. TV broadcast channels 7 through 13 are in an upper VHF band extending from 174 to 216 MHz. TV broadcast channels 14 through 83 are in a UHF band extending from 470 to 890 MHz, but some of these uppermost UHF channels will no longer be available for TV broadcasting. When a wide-band RF amplifier close to the antenna is used for driving a coaxial-cable downlead to an indoor receiver, there is difficulty in terminating this transmission line with its characteristic impedance for all of the TV broadcast channels. The coaxial-cable downlead appears to be an infinite-length transmission line for DTV signals broadcast at frequencies for which the coaxial cable is terminated with its characteristic impedance. So, there will be no reflections in the downlead when receiving such a DTV signal TV signals broadcast at signal frequencies at which this transmission line is not terminated with its characteristic impedance will be subject to echoes caused by reflections in the downlead, however. The downlead will often be a source of echoes

for some of the DTV signals received by the DTV receiver with outdoor antenna, whether a wide-band RF amplifier is used to drive the downlead, or whether the downlead connects directly from the antenna. The design of a tuner that exhibits characteristic impedance [[ait]] at its RF input connection for every channel in each of the three discrete frequency ranges is extremely difficult, even when different RF stages are used for the UHF and VHF bands.

[0008] The inventor points out that the improvement in reliability and reduction in size of this front-end section of the TV receiver makes feasible a remote tuner located nearby an outdoor antenna or incorporated into the structure of the ~~antennas~~ antenna. This remote tuner is designed to drive a coaxial-cable downlead with intermediate-frequency (IF) signal. In order to eliminate reflections of the IF signal, the coaxial cable is terminated with its characteristic impedance in the IF signal frequency range. Since any TV channel the remote tuner selects for reception is converted to repose in the same 6 MHz wide [[ff]] IF channel, the input coupling network required to terminate the coaxial cable in its characteristic impedance is the same, no matter which TV channel is selected for reception. This eliminates need for re-tuning, the input coupling network in order to terminate the coaxial cable in its characteristic impedance when different DTV broadcast channels are selected for reception.

[0009] Preferably, reflex methods are employed to carry up operating power and remote-control signals to the remote tuner via the coaxial-cable downlead. Alternatively, operating power can be conducted to the remote tuner via separate connection. The remote-control signals for the remote tuner can be conducted to it via separate connection. Modulation of a carrier with the ~~remotecontrol~~ remote-control signals facilitates the remote-control signals being, conducted to the remote tuner via the coaxial-cable downlead by frequency multiplexing.

[0015] FIGURE 3 is a schematic diagram of a local converter (or "set-top box") designed in accordance with the invention to receive ~~process~~ intermediate-frequency DTV signal supplied via the coaxial-cable downlead driven from the FIGURE 1 remote tuner and to up-convert that intermediate-frequency DTV signal to a radio-frequency DTV signal for reception by a conventional digital television receiver.

[0021] The tuner 10 may be of single-conversion type in which the frequency-conversion circuitry 13 includes only a single mixer following the RF amplifier stage 12, which mixer superheterodynes the RF amplifier stage 12 output signal with oscillations from the electrically tunable local oscillator 14 in a down-conversion procedure that generates an very-high-frequency ~~(VFU,)~~ (VHF) or lower-band intermediate-frequency signal to be amplified by a subsequent intermediate-frequency voltage amplifier 15. Alternatively, in better-quality DTV receivers, the tuner 10 may be of double-conversion type in which the frequency-conversion circuitry 13 includes two mixers, a first mixer used for a frequency up-conversion and a second mixer used for a subsequent frequency down-conversion. In a doubleconversion tuner, the first mixer following the RP amplifier stage 12 heterodynes the RF amplifier stage 12 output signal with oscillations from the electrically tunable local oscillator 14 in an up-conversion procedure that generates an ultra-high-frequency (UHF) intermediate-frequency signal. This UHF IF signal is filtered to reject image frequencies, and the filtered UHF signal is supplied to a second mixer. The second mixer heterodynes the filtered UHF signal with oscillations from a UHF local oscillator in a down-conversion procedure that generates a very-high-frequency (VHF) or lower-band intermediate-frequency signal to be amplified by a subsequent intermediate-frequency voltage amplifier 15.

[0025] The bandpass coupler 19 is a wideband filter, which can be constructed using inductors and capacitors, but can be more compactly constructed using ceramic resonator elements. The bandpass coupler 19 is transparent to the IF signal supplied from the cable-driver amplifier 18, but presents a ~~lugh~~ high impedance to the coaxial cable 20 at

the low frequencies at which power is cabled up to the remote tuner 10 via the cable 20. This high impedance usually is owing to the inclusion of a blocking capacitor in the connection of the bandpass coupler 19 to the center conductor of the coaxial cable 20. The bandpass coupler 19 also presents a high impedance to the coaxial cable 20 at frequencies where the cable 20 carries other signals in frequency multiplex with the IF signal supplied from the cable-driver amplifier 18.

[0026] The remote tuner 10 includes circuitry 21 to extract power from the cable 20 for powering the tuner 10. The outside conductor of the coaxial cable 20 is grounded as part of the normal arrangements to secure protection against lightning strike, and the circuitry 21 includes a grounded smoothing capacitor across which the direct voltage for the tuner 10 power supply is ~~maintained~~ maintained. A choke coil in the circuitry 21 input connection from the inside conductor of the coaxial cable 20 presents a high impedance to the IF signal supplied from the cable-driver amplifier 18 and other signals in frequency multiplex with that IF signal. In embodiments of the invention in which the power transmitted up to the tuner 10 via the cable 20 is direct-current in nature, the direct-current power is conducted from the inside conductor of the coaxial cable 20 to the grounded smoothing capacitor in the circuitry 21 via the choke coil. In some embodiments of the invention the power transmitted up to the tuner 10 via the cable 20 is alternating-current in nature. The alternating-current extracted from the inside conductor of the coaxial cable 20 via the choke coil is rectified in the circuitry 21 to develop direct voltage across the grounded smoothing capacitor therein. Different embodiments of the invention in which the circuitry 21 includes half-wave rectification circuitry, transformerless full-wave rectification circuitry, or rectification circuitry with an isolating transformer for converting low-frequency alternating-current power to direct-current power are possible, of course.Supposing the transistors in the remote tuner 10 are operated with supply voltages of only a few volts, the use of a stepdown isolation transformer in the circuitry 21 facilitates operating power being cabled up via the coaxial cable 20 at higher voltage and lower current, so I.sup.2R losses are lowered for a long cable run Cabling up power at a frequency higher than the 60 Hertz electrical mains

frequency --e.g., 400 or 1000 Hz--reduces the bulk and weight of a stepdown transformer in the circuitry 21.

[0035] In the FIG. 2 local DTV receiver 30 the IF signal that the cable-driver amplifier 18 in the FIG. 1 remote tuner 10 applies to the coaxial cable 20 couples through a bandpass coupler 38 to a characteristic-impedance termination 39 for the cable 20. The cable 20 appears to the cable-driver amplifier 18 to be an infinite-length transmission line, since the characteristic-impedance termination 39 does not reflect the IF signal back to the amplifier 18. The characteristic-impedance termination 39 is essentially a pure resistance at IF and will in some embodiments of the local DTV receiver 30 essentially consist of a ~~resistor~~ resistor. In usual practice, the reactive components in the bandpass coupler 38 provide tuning that negates the effects of stray reactance shunting the resistance of termination 39. The bandpass coupler 38 presents a high impedance to the coaxial cable 20 at the low frequencies at which power is cabled up to the remote tuner 10 via the cable 20. This high impedance usually is owing to the inclusion of a blocking capacitor in the connection of the bandpass coupler 38 to the center conductor of the coaxial cable 20. The bandpass coupler 19 also presents high impedance to the coaxial cable 20 insofar as the remote-control information signal supplied from the modulator 35 is concerned.

[0042] The local converter 50 includes circuitry 54 for generating a remote-control information signal applied to a modulator 55, which modulates a carrier in accordance with that signal to furnish a modulated carrier signal applied via a bandpass coupler 56 to the coaxial cable 20. The modulator 55 and the bandpass coupler 56 are similar in design to the modulator 35 and the bandpass coupler 36 in the FIG. 2 local DTV receiver 30. The circuitry 54 for generating a remote-control information signal applied to the modulator 55 includes component circuitry essentially the same as the circuitry 34 in the FIG. 2 local DTV receiver 30 used for generating a remote-control information signal

applied to the modulator 35. However, the circuitry 54 further includes additional component circuitry for generating channel-selection control signal values for application to an electrically controlled local oscillator 57 used in ~~uconverting~~ upconverting to TV broadcast frequencies the IF signal supplied to the local converter 50 from the remote tuner 10 via the coaxial cable 20.

[0046] FIG. 4 shows a remote tuner 70 capable of concurrently receiving DTV signals transmitted over two different broadcast channels. Signal-splitter and balun circuitry split the response of an outdoor antenna into respective unbalanced radio-frequency input signals for electrically tunable front-end circuitry 72 and for electrically tunable front-end circuitry 73. The front-end circuitry 72 is similar to the front-end circuitry in the remote tuner 10 and supplies a first IF signal to the cable-driver amplifier 18. As shown in FIG. 1, this front-end circuitry comprises the electrically tunable RF amplifier 12, the frequency conversion circuitry 13, the electrically tuned local oscillator 14, the AGC'd IF voltage amplifier 15, the envelope detector 16 and the AGC signal generation circuitry 17. The amplified IF signal from the front-end circuitry 72 in the FIG. 4 remote tuner 70 has a first center frequency and is applied as input signal to the IF cable-driver amplifier 18. The cable-driver amplifier 18 amplifies the power of this IF signal in the FIG. 4 remote tuner 70, supplying it through the bandpass coupler 19 to the ~~download~~ downlead coaxial cable 20.

[0048] The remote tuner 70 of FIG. 4, like the remote tuner 10 of FIG. 1, includes circuitry 21 to extract the from the coaxial cable 20 direct-current or low-frequency alternating current power transmitted from an indoor location. The remote tuner 70 of FIG. 4 is also arranged like the remote tuner 10 of FIG. 1 insofar as receiving remote-control signals transmitted from the indoor location via the coaxial cable 20 is concerned. The bandpass coupler 22 is transparent to the carrier modulated with remote-control signal information, coupling it to the echo-free termination 23 for

application as input signal to the demodulator [[24]] 24. The demodulator 24 demodulates the carrier and supplies the demodulated remote-control signal information to electrical control circuitry 76. The electrical control circuitry 76 of FIG. 4 converts some of the demodulated remote-control signal information to control signals for the electrically tunable RF amplifier and for the electrically tuned local oscillator in the front-end circuitry 72, similarly to the way that this is done by the electrical control circuitry 25 in the remote tuner 10 of FIG. 1. However, the electrical control circuitry 76 of FIG. 4 additionally converts further demodulated remote-control signal information to control signals for the electrically tunable RF amplifier and for the electrically tuned local oscillator in the front-end circuitry 73.

[0053] The data ~~de-randorilzer~~ de-randomizer 88 connects to a transport de-multiplexer 89 shown in FIG. 5C, which de-multiplexer 89 sorts packets of data in accordance with a packet identification (PID) code within each packet. The transport de-multiplexer 89 directs audio data packets to an audio decoder 90 and directs video data packets to a video decoder 91. The transport de-multiplexer 89 directs auxiliary data packets to an auxiliary data decoder 92, which deletes PID codes from the data and assembles the remaining data into a continuous data stream. The trellis decoder 85, the convolutional de-interleaver 86, the Reed-Solomon error-corrector 87, the data de-randomizer 88, the transport de-multiplexer 89, the audio decoder 90, the video decoder 91 and the auxiliary data decoder 92 are conventional in their structures, connections and operations. To receive signals transmitted in accordance with the current United States DTV broadcast standard, the audio decoder 90 is of AC-3 type, and the video decoder 91 is of MPEG-2 type.

[0054] The left-channel, right-channel and low-frequency-enhancement digital audio signals from the audio decoder 90 are supplied to an audio swap multiplexer 93 as a first set of digitized audio signals that the multiplexer 93 can select for being reproduced as its output signal. The red-drive, green-drive and blue-drive digital video signals from the

video decoder 91 are supplied to a video swap multiplexer 94 as a first set of digitized audio streams that the ~~mulliplexer~~ multiplexer 94 can select for being reproduced as its output signal. The data from the ~~auxiliarn~~ auxiliary data decoder 92 are supplied to a data swap multiplexer 95 as a first set of data that the multiplexer 95 can select for being reproduced as its output signal. The selections by the audio swap multiplexer 93, by the video swap multiplexer 94 and by the data swap multiplexer 95 are made responsive to control signals from control circuitry 96 for the swap multiplexers 93, 94 and [[95]] 95. The connections for these control signals are omitted from FIG. 5C to avoid confusing a person viewing the drawing. The control circuitry 96 is arranged to receive swap instructions from a control panel of the local DTV receiver 80 ~~With~~ with switches that are actuated by a human being. The control circuitry 96 is further arranged to receive swap instructions relayed from a receiver for transmissions from a remote controller with switches that are actuated by a human being.

[0055] FIG. 5A shows a bandpass coupler 98 included in the local DTV receiver 80 for coupling the second IF signal with the second center frequency from the coaxial cable to a characteristic-impedance termination 99 for the cable [[20]] 20. The cable 20 appears to the cable-driver amplifier 74 to be an infinite-length transmission line, since the characteristic-impedance termination 99 does not reflect the IF signal back to the amplifier 74 in the FIG. 4 remote tuner 70. The characteristic-impedance termination 99 is essentially a pure resistance at the second IF signal frequencies and will in some embodiments of the local DTV receiver 80 essentially consist of a resistor. In usual practice the reactive components in the bandpass coupler 98 provide tuning that negates the effects of stray reactance shunting the resistance of termination 99. The IF signal appearing at the echo-free termination 99 is amplified by an intermediate-frequency amplifier 100 before being applied to demodulation and analog-to-digital circuitry 101 as its input signal. Circuitry 102 responds to overflow bits from the analog-to-digital conversion process to develop the AGC signal that regulates the voltage gain of the IF amplifier 100 so that the dynamic range of the analog-to-digital conversion process in circuitry 101 is well utilized. Second receiver synchronization circuitry 103 responds to

the baseband DTV signal supplied from the demodulation and ADC circuitry 101 to perform receiver synchronization functions similarly to first receiver synchronization circuitry 43. Adaptive filtering 104, similar in construction and operation to the adaptive filtering 44, responds to the digitized baseband DTV signal supplied from the demodulation and ADC circuitry 101 and performs channel-equalization and echo-suppression. The resulting equalized digitized baseband DTV signal is applied as input signal to a trellis decoder 105 that performs the symbol decoding function. The trellis decoder 105 is the customary 12-phase type, presuming 8-VSB DTV signal is to be received. The symbol decoding results are, per customary practice, fed back from the trellis decoder 105 to the adaptive filtering 104, to furnish a basis from which to obtain estimates as to the symbols actually transmitted by the transmitter. These estimate are ~~usefull~~ useful in decision-feedback algorithms for adapting the parameters of the adaptive filtering 104 and are useful in iterative filtering procedures that the adaptive filtering 104 may employ to suppress post-echoes.

[0058] FIG. 5C shows output connections of the audio decoder 110, the video decoder 111 and the auxiliary data decoder 112 to data re-samplers 113, 114 and 115, respectively. The data re-sampler 113 re-samples the left-channel, right-channel and low-frequency-enhancement digital audio signals from the audio decoder 110, sampled according to the clock in the second receiver synchronization circuitry 103, to generate left-channel, right-channel and low-frequency-enhancement digital audio signals sampled according to the clock in the first receiver synchronization circuitry 43, which signals are supplied to the audio swap multiplexer 93 as a second set of digitized audio signals that the multiplexer 93 can select for being reproduced as its output signal. The data re-sampler 114 re-samples the red-drive, green-drive and blue-drive digital video signals from the video decoder 111, sampled according to the clock ~~In~~ in the second receiver synchronization circuitry 103, to generate red-drive, green-drive and blue-drive digital video signals sampled according to the clock in the first receiver synchronization circuitry 43, which signals are supplied to the video swap multiplexer 94 as a second set of digitized video signals that the multiplexer 94 can select for being reproduced as its output signal. The data re-sampler 115 re-samples the data from the auxiliary data

decoder 112, sampled according to the clock in the second receiver synchronization circuitry 103, to generate data sampled according to the clock in the first receiver synchronization circuitry 43, which data are supplied to the data swap multiplexer 95 as a second set of data that the multiplexer 95 can select to reproduce as its output signal. FIG. 5C shows the data swap multiplexer 95 output signal being made available outside the local DTV receiver 80 for connection to an ~~umspecified~~ unspecified data processing device.

[0063] The remote tuner 70 of FIG. 4 and its companion local DTV receiver 80 provide for the simultaneous reception of two DTV channels and the insertion of the picture received over either of the channels into the picture received over the other of the channels. Remote tuners that provide for the simultaneous reception of an even larger number of DTV channels can be constructed in accordance with the precepts of the invention here ~~deseribed~~ described. Companion local DTV receivers for such remote tuners can also be constructed in accordance with the precepts of the invention here described. Such a local DTV receiver selects one of the simultaneously received DTV signals to supply sound and the main displayed information. The receiver has capability for selecting one or more of the others of these DTV signals for picture-in-picture display, with a wide variety of swapping features being possible. Variants of the invention which admit some of the received signals being analog television signals--e.g., of NTSC type--are easily constructed, also, by one skilled in the art of television receiver design and acquainted with the contents of this specification and its accompanying drawing.

[0072] The filter 33 of the local DTV receiver 140 is shown more explicitly in the FIG. 7A, as including a series-arm choke coil 141 and a shunt-leg capacitor 142 for the IF signals and for the carrier modulated by remote-control information signal. This series-arm choke coil 141 conducts [[de]] d-c power or low-frequency a-c power from the power supply 33 to the coaxial cable 20 for transmission up to the remote tuner 130. The capacitor bypasses the power supply 33 insofar as an IF signal or the carrier modulated by remote-control information signal is concerned.

[0080] While frequency multiplexing of the first and second IF signals is currently preferred, there is an alternative approach that can be taken. In this alternative approach the two vestigial-sideband signals that are currently selected for reception are converted to double-sideband amplitude-modulation signals the carriers of which are of the same frequency but are in quadrature phasing with each other. The signals are then combined for application to the coaxial cable [[20]] 20. This technique may be used together with frequency multiplexing if several DTV channels are to be simultaneously received.

[0082] Supposing that the local DTV receiver is of cable-ready design, still another ~~pluralonversion~~ plural-conversion approach is for the remote tuner to use [[It]] IF signals reposing in the superband cable-TV channels. Then, in the local DTV receiver the remote tuner IF signals can be ~~down-conveited~~ down-converted using the same set of converters used for developing PIP signals for reception from cable-TV signals.

[0083] One skilled in the art of television reception design will by acquaintance with the remote tuner concept taught in this specification be enabled to design a number of television reception systems employing a remote ~~timer~~ tuner, which observation should be borne in mind when evaluating the scope of the claims which follow.